Risk Factors and Incidence of Injuries and Stress Fractures in Initial Entry Training

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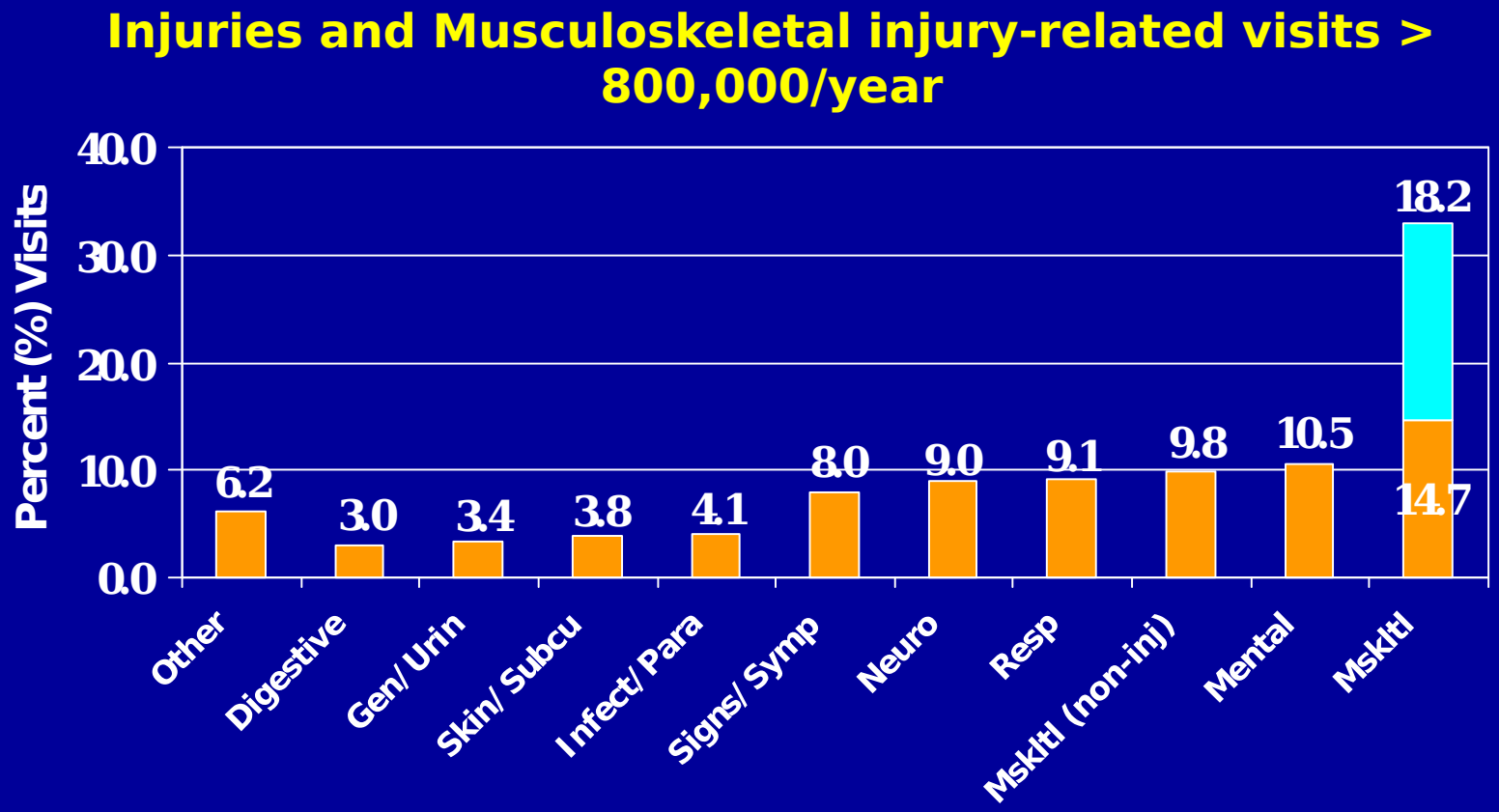
Injury and Illness Outpatient Visits Among Soldiers, CY 2002



Total Outpatient Visits for Injury and Illness = 2,584,597

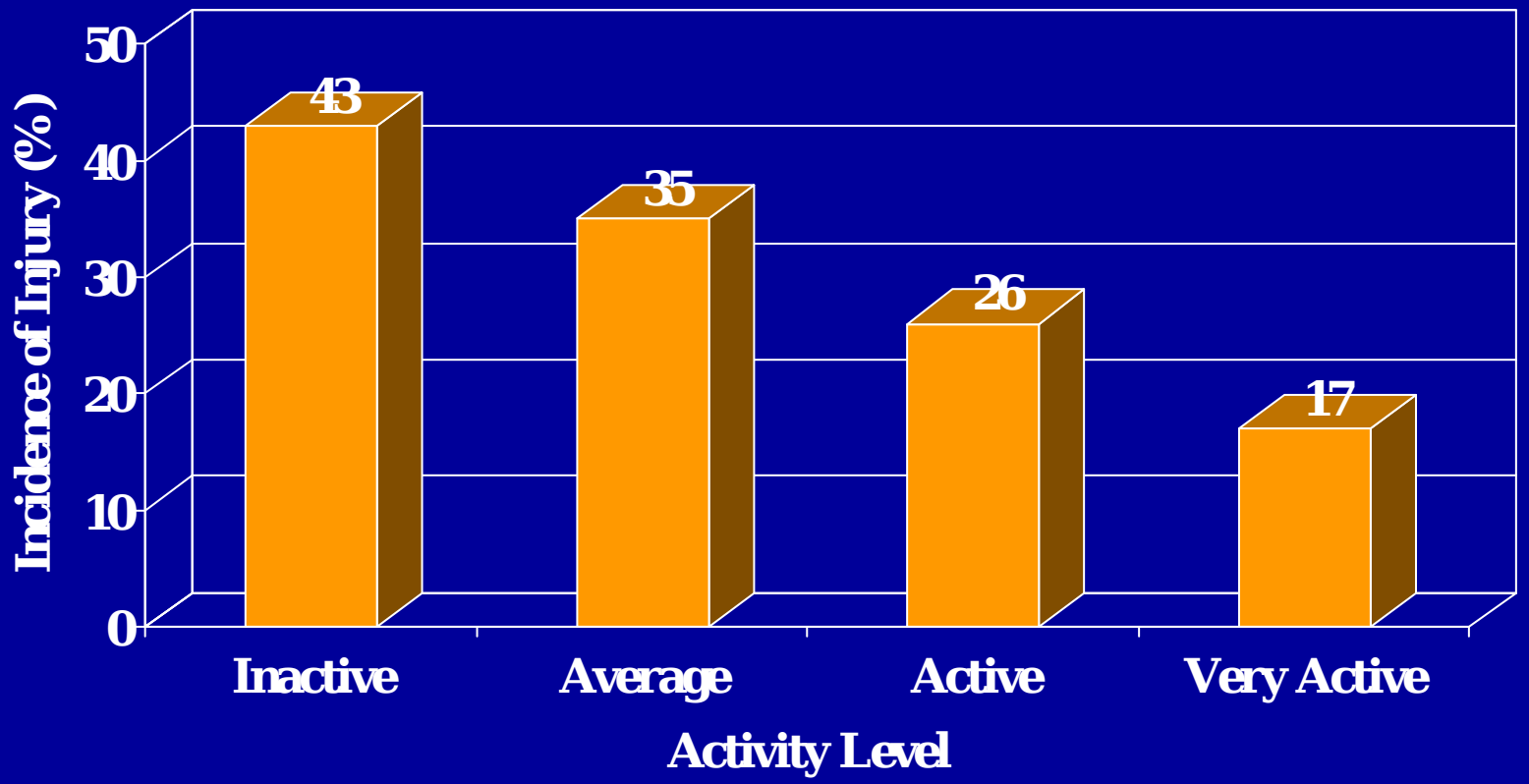
Injury Impact On BCT Attrition

- Loss training days
- Impact on the training unit
- Negative impact on motivation
- Discharge of PTRP soldiers (1998-2001)
  - Men: 44.6%; Females: 58.8% (Average for all PTRPs)
  - $27,628 to recruit and train (BCT)[a] one soldier
  - 2,240 PTRP discharges @ Ft. Jackson 1998-2001
    - **$61.8 M**

[a]TRADOC , Apr 02

Risk Factors for Injury

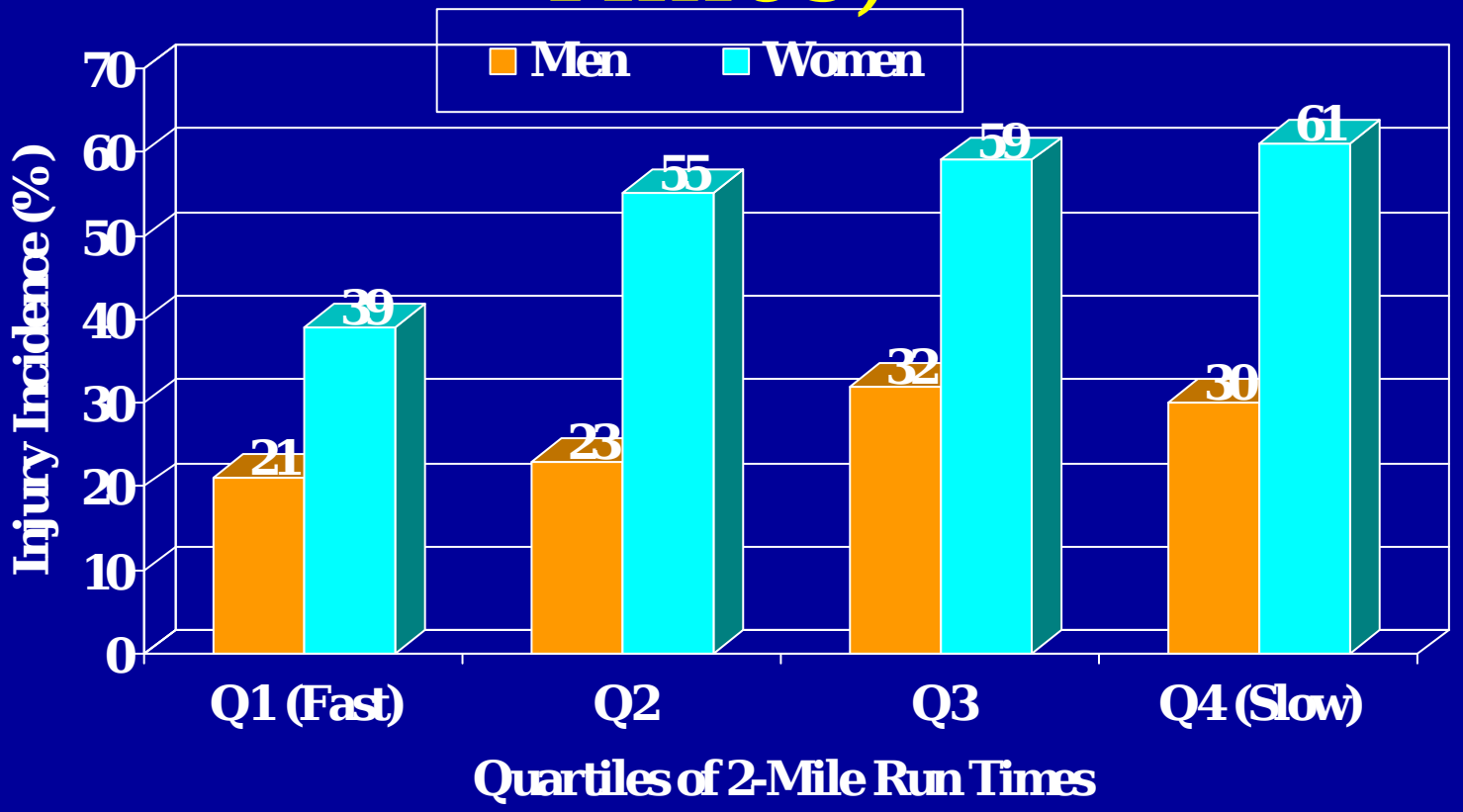
Past Physical Activity Level and Incidence (%) of Injury in Male Trainees



FT JACKSON 1984, N = 124, 8 WK F/U
MH Chi Sq for trend p = .06

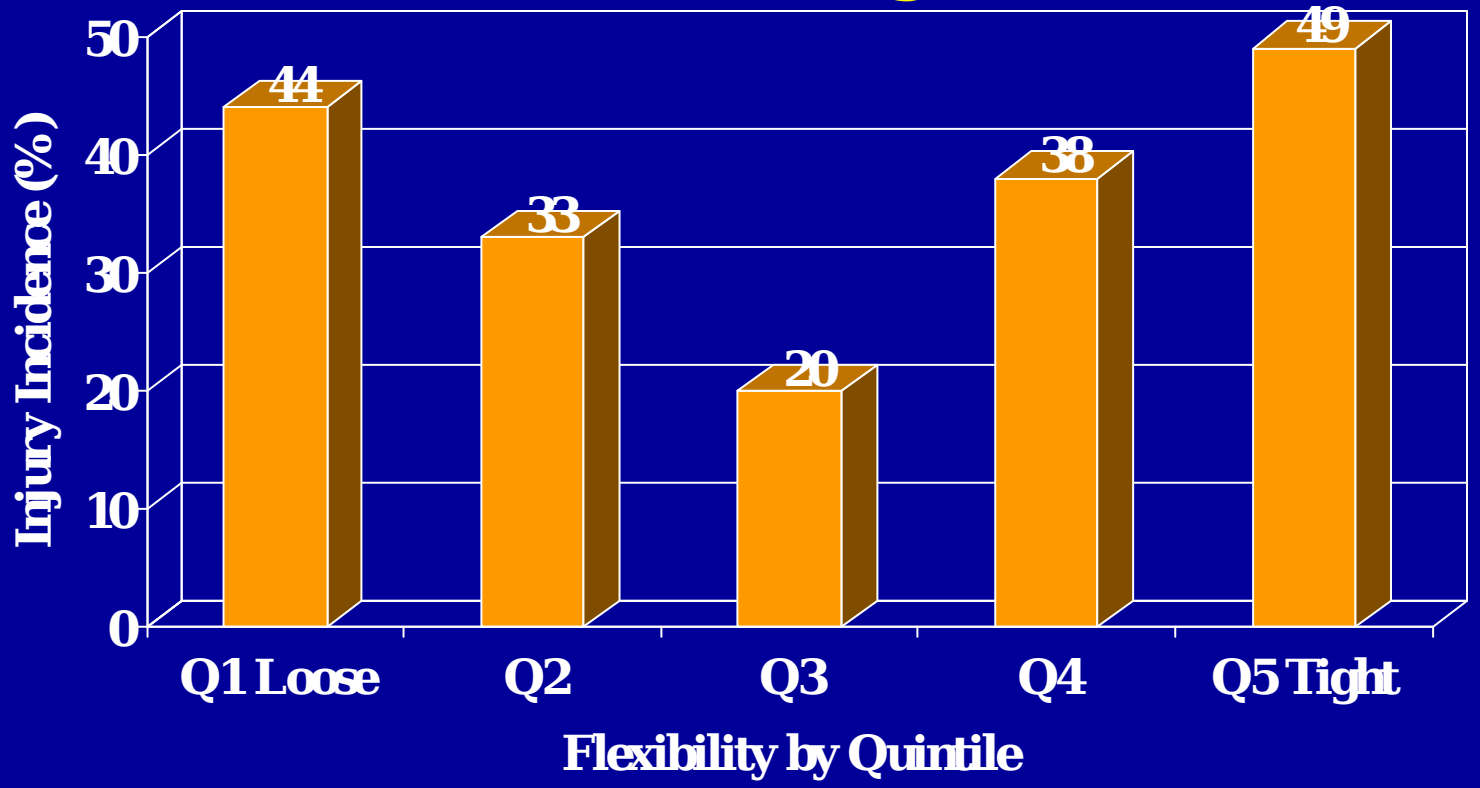
Jones, B.H. et al
Body Comp and Phys Fitness, National Academy Press 1992, pp

Initial Fitness Level in BCT and Injuries (2-Mile Run Times)



Knapik, USACHPPM Epicon Report No 29-HE-8370-99, 1999

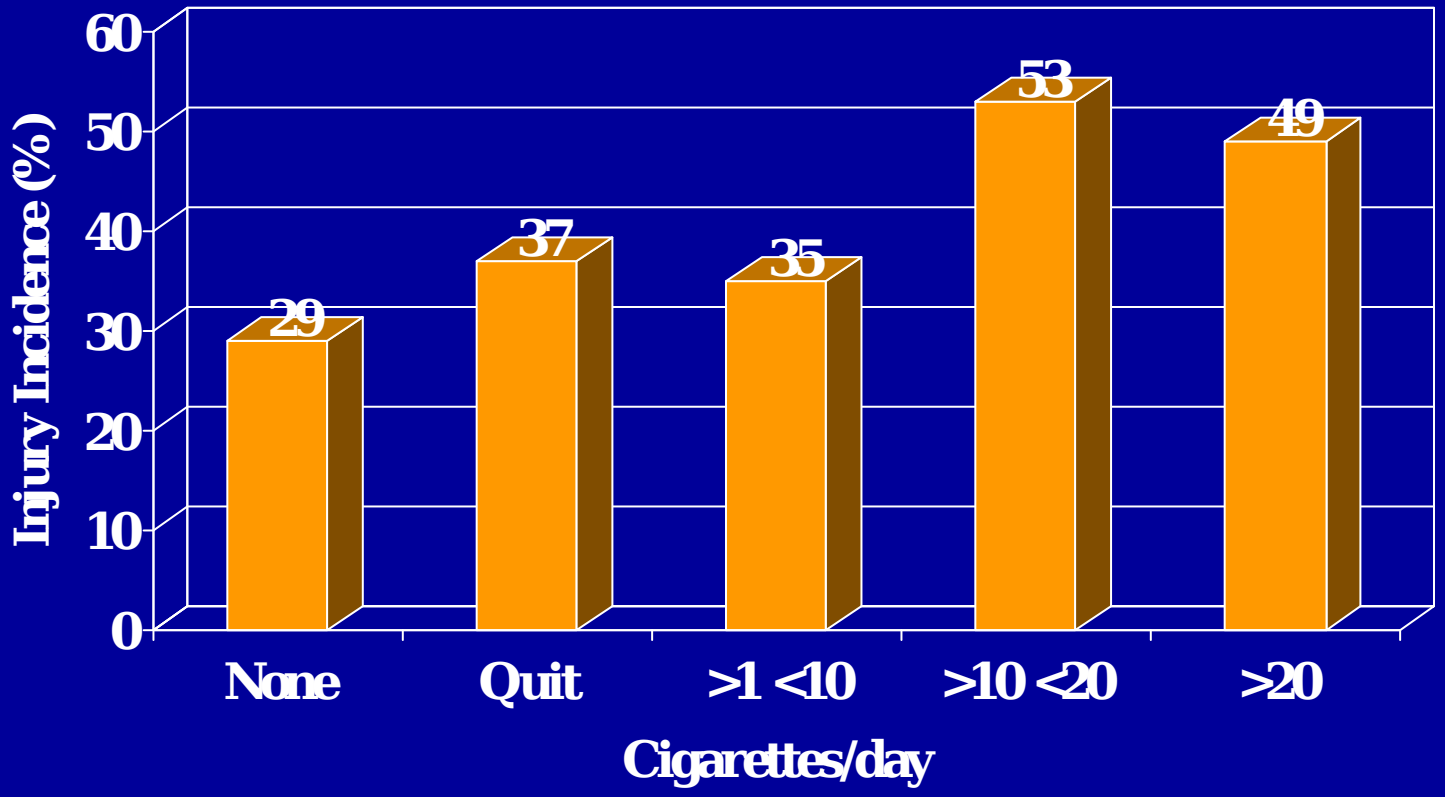
Flexibility (Sit and Reach) and Injuries in Infantry Basic Training



Ft. Benning, 1987; N= 303, Median= 4.3cm (RNG= -24 to +28)
RR Q1 vs Q3= 2.2, <.05
RR Q5 vs Q3= 2.5, <.05

Jones, BH et al
MSSE Vol 25(2), 1993

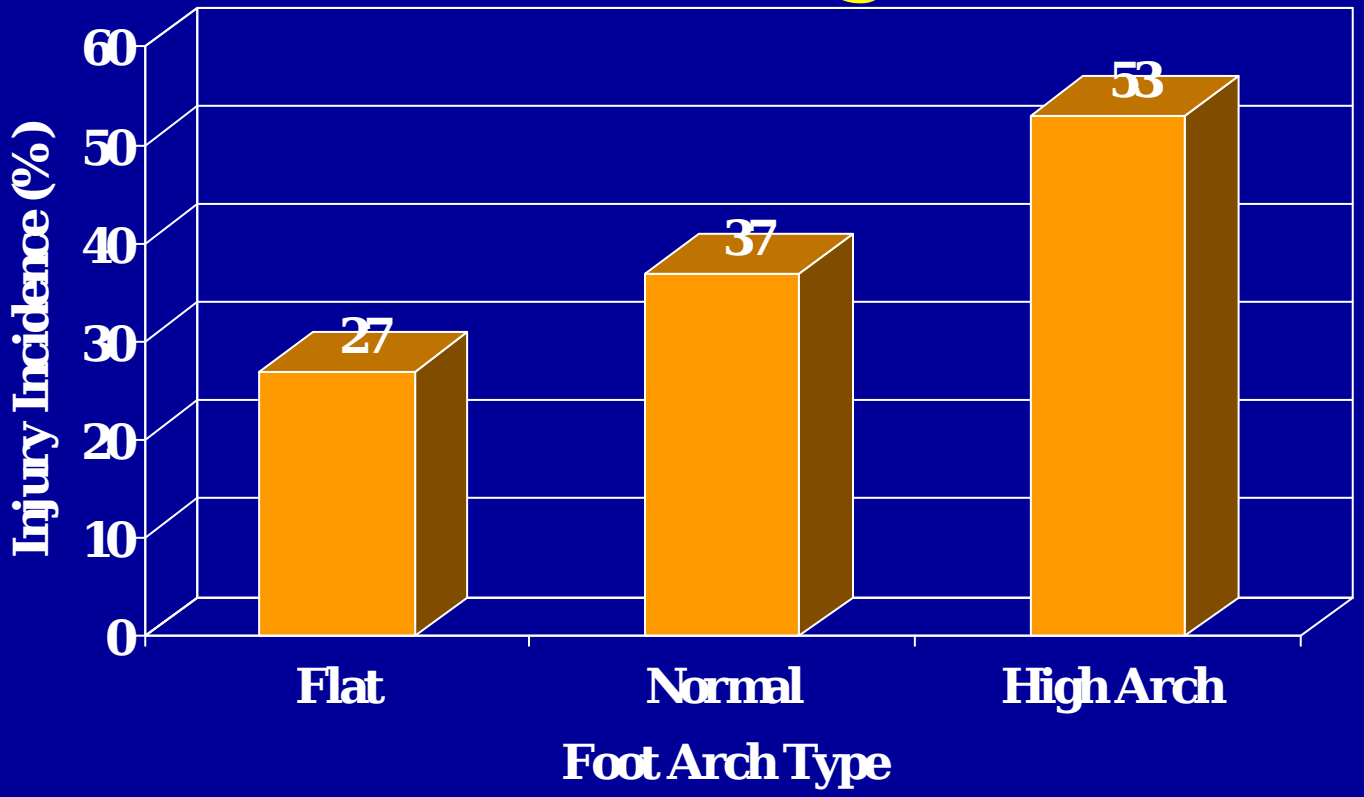
Cigarette Smoking and Lower Extremity Injuries in Infantry Basic Training



Ft. Benning, 1987, 12 Wk F/U,
N= 299
Chi Sq p< .05

Jones, B.H. et al
MSSE Vol 25(2), 1993

Foot Morphology and Injuries in Infantry Basic Training



*Flat arch= low 20%; Normal arch= middle 60%; High arch= top 20%
Ref: Navicular Ht/ foot length ratio

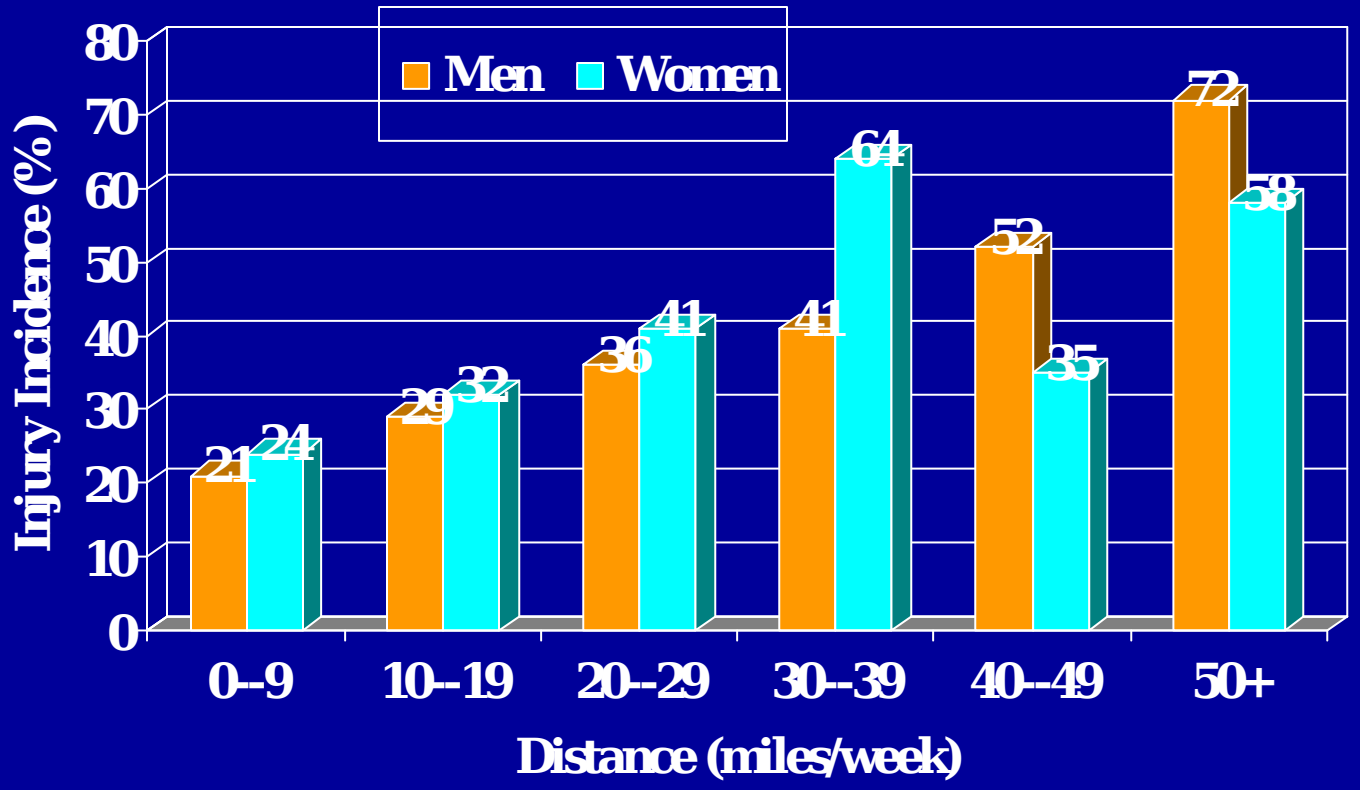
Arch Fam Med, 2:773-777, 19

Run Distance, Stress Fractures, and Fitness of Marine Recruits

Marines (N)	Run Distance (miles)	Stress Fx Incidence (n/100)	Final Three-Mile Time (min)
1136	55	3.7	20.3
1117	41	2.7	20.7
1097	33	1.7	20.9

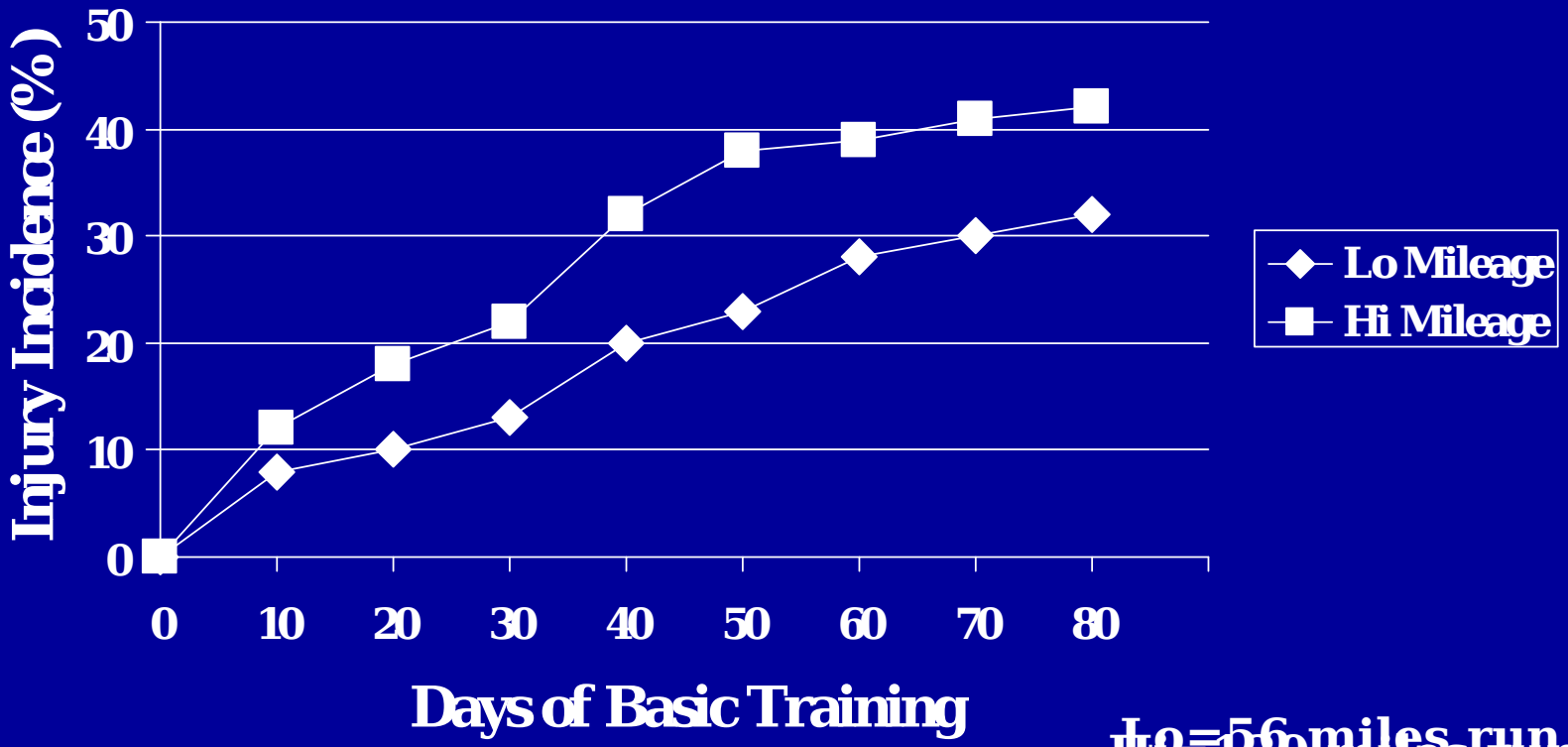
Shaffer, Presentation at 43d Annual Meeting of the American College of Sports Medicine, Cincinnati, OH 1996

Running Distance and Incidence of Injuries in Recreational Runners



Kolpan, JAMA 248: 3118, 1982

Running Mileage and Injury Incidence in Infantry Basic Training



Lo=56 miles run
Hi=130 miles run

Jones, Sports Med 18: 202, 1994

Results

Ft. Leonard Wood
December 2002

Injury Rates (%/month)[a] by Training Type[b]

Injury Type	Men				Women		
	BCT	MP	Chem	Eng	BCT	MP	Chem
Any Injury	14.3	5.8	7.8	11.0	26.6	15.5	16.5
LE OU Injury[c]	10.2	3.3	5.1	6.7	21.5	12.0	13.4
Time Loss	11.[illegible]	3.7	5.8	6.5	20.0	11.[illegible]	13.9

[a] Percent of trainees injured per month

[b] Full-Cycle Trainees

[c] Lower extremity overuse injury

Injury Rate (%/month)[a] by Time in Training

Training Type[b]	Males		Females	
	Wk 1-9	Wk 10 – EOC	Wk 1-9	Wk 10 - EOC
BCT (9 wk)	14.3 %	--	26.6	--
MP (17 wk)	8.8%	2.5	25.0	4.8
B 82 (19 wk)	10.4 %	5.5	29.4	4.9
E 35 (14 wk)	12.0 %	9.3	--	--

[a] Percent of trainees injured per month

[b] Type of training and length of training

Comparison of BCT Injury Rates (%/month)

Date	Post	Men	Women	RR[a]
Dec, 2002	**FLW**	**14.3%**	**26.6%**	**1.9**
Dec, 1995	FLW	19.1%	31.2%	1.6
July, 1998	Jackson	15.5%	29.0%	1.9
Nov, 2000	Jackson	6.7%	18.7%	2.8

[a] RR (Relative Risk) = Risk of injury for females compared to males

Comparison of BCT Stress Fracture Rates (%/month)[a]

Date	Post	Males	Females	RR[b]
2002 [cd]	**FLW**	**0.7%**	**3.3%**	**4.7**
1995 [cd]	FLW	1.7%	3.9%	2.3
1998 [c]	Jackson	0.7%	2.2%	3.1
2000 [c]	Jackson	0.3%	0.7%	2.3

[a] Percent of trainees with a stress fracture per month

[b] RR (Relative Risk) = Risk of injury for females compared to males

[c] Medical record review

[d] X-ray/bone scan review

Impact of Injuries - FLW

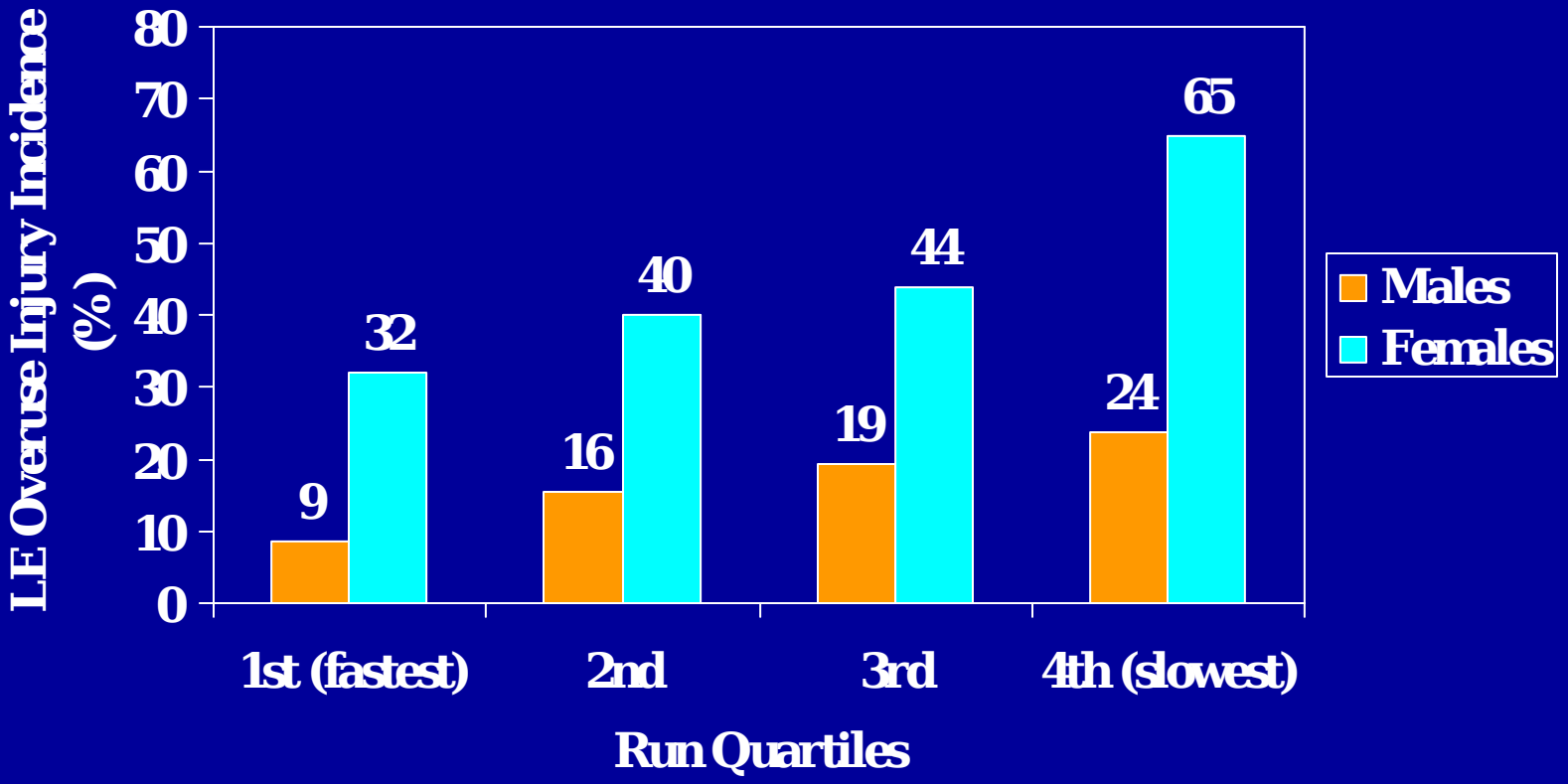
	Clinic Visits		Profile Days		PTRP[b]	
	Males	Females	Males	Females	Males	Females[c]
BCT	1.7	2.8	5.9	10.7	2	11
MP	1.6	2.8	4.2	11.3		5
Chem	1.7	3.2	5.4	13.3		1
Eng	1.9	2.5	5.3	6.0		1
Total	1.7	2.9	5.3	11.4	2	18

[a] Full Cycle trainees with one or more injuries.

[b] Data from units or PTRP. Both males had a stress fracture.

[c] 2 females were not assigned to PTRP

Association of Initial Run Time and Lower Extremity Overuse Injury[a]



RR Males: Q4/Q1 =2.81 p=<0.001; RR Females: Q4/Q1=2.03, p=<0.001

[a] Any LE overuse injury in the first 9 weeks of training

Conclusions

- Stress fracture and injury rates are lower than past rates at FLW
- Injury rates in BCT are generally higher than the first 9 weeks of OSUT
- Rates in the final weeks of OSUT (after 1st nine weeks) are much lower
- Females are injured twice as often as males
- Least fit males and females have a greater injury risk

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